device, but it may help decrease the number of biopsies needed by allowing a physician to screen large swaths of tissue quickly, and guiding them to sites of malignancies. Biopsy, which is still necessary for confirmation of malignancy, becomes much less of a hit-or-miss proposition with the use of the LIFE-Lung.

Weigel asserts that differential fluorescence is currently too expensive to be practical for general screening. She estimates the cost of the procedure at $2,000, compared to the $40 cost of a chest X-ray, the current general screening method. She is testing the technique in the highest-risk patients: people who appear to be cured following successful resection of lung cancer but who have approximately a 5% annual chance of developing a second primary cancer, and people with emphysema, who have a 3–5% annual chance of developing lung cancer.

One of the biggest contributions differential fluorescence can make, says Weigel, is to render practical a new technique called photodynamic therapy. The 30-minute procedure begins 48 hours after injection of a photosensitized drug, Photofrin, which concentrates mainly in cancerous tissue. When activated by nonthermal, 630-nm red laser light, Photofrin destroys cancer cells, leaving healthy tissue relatively unharmed. "Photodynamic therapy is curative in over 90% of patients with early NSCLC," says Weigel. "The importance of differential fluorescence for photodynamic therapy is that it could tell the oncologist where to shine the laser to kill the cancer so that they are not, in effect, shooting in the dark." Photodynamic therapy was conditionally approved for treatment of early stage I lung cancers by the FDA in January 1998.

Weigel also thinks differential fluorescence will become useful for monitoring treatment of cancers to make sure the treatment is working. Doctors would simply use the device on patients who have undergone radiation or photodynamic therapy to make sure the cancer had disappeared.

Both Xillix and Oak Ridge National Laboratory are developing differential fluorescence to screen a wide variety of other cancers, notably of the gastrointestinal tract. Oak Ridge researchers successfully tested their device against esophageal cancer, a rare but increasing malignancy that afflicts 11,000 and kills 10,000 people in the United States annually. In clinical trials, specificity was 95–100%, says Overholt. Xillix also plans to target bladder cancer, cervical cancer, and head and neck cancers with its device, says Laurie McMichael, the company's manager of investor relations and communications.

ehp net

Disease-free Zone

The Animal and Plant Health Inspection Service (APHIS), a service of the U.S. Department of Agriculture (USDA), is responsible for maintaining the health of the United States' plants and animals and thereby contributing to the national economy and public health. This includes guarding against the importation of diseases and pests, controlling insect and plant diseases that do break out within the nation's borders, and providing protection for U.S. animals ranging from endangered wild species to laboratory rats to show dogs. The APHIS World Wide Web site, located at http://www.aphis.usda.gov/, offers some insight into how the service discharges its responsibilities.

The Mission link on the main page leads to a narrative, peppered with hypertext, that describes the mission of the APHIS and how the service goes about carrying out its mission. Each link within the narrative leads to fact sheets and APHIS program pages, such as the Center for Veterinary Biologics home page, the National Biological Control Institute home page, and a fact sheet on how APHIS facilitates the safe export of agricultural products. The Activities link leads to a guided tour of APHIS's activities conveyed through pictures. The Organization link leads to an easily navigable table of the various offices within APHIS.

Under the Functions heading on the main page is a list of links to topics of care within the service. Each link leads to an outline of key APHIS links, as well as other Web sites related to the topic. For instance, the Excluding Pests link provides access to such sites as the APHIS Plant Protection and Quarantine home page; the APHIS Welcome to the United States site, which outlines customs requirements for importing fruits, vegetables, and plants; and the Meet Agriculture's Beagle Brigade! site, which tells how the USDA is using beagles to sniff out illegal fruit and meat arriving from overseas. Related Web sites listed under the Excluding Pests link include the home pages for the U.S. Customs Service and the U.S. Immigration and Naturalization Service.

The News & Information heading on the main page is the gateway to a wealth of information on such topics as APHIS publications, regulations, import–export rules, and congressional statements. The Publications link leads to a listing of all currently available APHIS publications, a vast library of brochures, fact sheets, and technical reports on topics ranging from the Africanized honeybee to water spinach. The Regulations link leads to a bank of all APHIS documents published within the past four months, as well as an archive of *Federal Register* notices dating back to 1995. This link also leads to a searchable online version of the 1998 edition of the *Code of Federal Regulations.*

The Import–Export link found under the News & Information heading leads to a detailed listing of the rules on importing and exporting various plant and animal species and products. The listing succinctly describes the documentation that must accompany each import or export, and includes contact telephone numbers for more information about specific families of plants and animals. The Communications to Congress link on the main page leads to the most recent statements and reports presented before Congress by APHIS, such as a 20 May 1998 statement by APHIS acting administrator Craig Reed concerning the Plant Protection Act.

The Hot Issues heading on the main page covers links to plant and animal issues in the headlines. For instance, the Medflies in Florida link leads to updates on how various Florida counties are faring in the battle against the Mediterranean fruit fly, which threatens the state's agriculture industry (the state is releasing sterile fruit flies as well as applying the pesticide malathion in an effort to eradicate the imported pest). Another example is the Vesicular Stomatitis link, which leads to weekly updates and contact information regarding the outbreak of this viral disease that appeared among New Mexico horses in mid-May.